**Template | Unit Enhancement**

***EXPLANATION & ARGUMENTATION***

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**Background Information**

**Instructional Materials Title: Land and Water**

**Publication Date:**

**Work Group Participants: Steve, Michael, Corrie, Marian, Julia**

**Date Developed: 8/23/13**

**High Leverage Lesson (Title and Page Number): Lesson 2, page 9**

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**Rationale**

This lesson is a great place to introduce argument because the students come up with many different theories of where the water comes from. This lesson was enhanced to meet Argumentation Standards.

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***Explanation* Lesson Enhancement**

**Overview**

**This would be inserted in the Reflect and Explain section of Lesson 2.**

**Probe Format and Language Frames for Argumentation (See Additional Information)**

**Part 1: Lesson Modifications to Lead Up to *Explanation* Experience**

**Introduce the CER framework to students through Everyday Examples at some point before this lesson.**

**Part 2: *Explanation* Learning Sequence**

1. Develop, practice, and display the discussion norms for argumentation. (Examples on page 7)
2. After students make a model of the stream table that rains, they will individually write a brief explanation on where the rain comes from.
3. Table groups then discuss their theories of where rain comes from.
4. Teacher will choose 3 explanations from the class to share out as a whole group to practice argumentation.
5. Students will choose the explanation they most agree with.
6. If students need support, they can use one or more of the following probes: ***Rainfall,* *Wet Jeans****, or* ***Where Did the Water Come From****?* (Page Keeley) The suggested modifications on page nine can also be used to increase background knowledge.
7. Teacher leads whole class argument.
8. Students are asked to write a paragraph outlining their argument.
9. Teachers can use the student writing as an assessment.

**Part 3-A: Describe Assessment Task**

*Include the* ***question****,* ***evidence*** *students will use, and* ***scientific concepts*** *students will use in their reasoning.*

*Where did the water droplets/rain come from?*

*The warm water from the “lake” evaporated and became invisible water vapor then condensed on the underside of the plastic beneath the ice pack (Claim). The water level of the “lake” dropped because the water evaporated into the air. Water vapor is invisible but as it condenses on the icepack. The water becomes water droplets that you can see (Evidence). Water changes from one state to another through heating and cooling. The water was warm so it evaporated; the ice was cold so the water condensed on it (Reasoning). The water did not come directly from the icepack because it could not go through the plastic (Rebuttal).*

**Part 3-B: Assessment Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **4-exemplary** | **3-proficient** | **2-Developing** | **1-beginning** |
| **Constructing an argument** | **Constructs and/or supports an argument with relevant evidence, data, and or a model, including rebuttal.** | **Constructs and/or supports an argument with relevant evidence, data, and/or a model.** | **Constructs and/or supports an argument with some evidence, data, and/or a model. Evidence may not be relevant.** | **Does not construct and/or support an argument with relevant evidence.** |
| **Respectfully engaging in argumentation** | **Respectfully provides and receives critiques from peers with evidence.** | **Respectfully provides and receives critiques from peers.** | **Provides and/or receives critiques from peers.** | **Not engaged in the process.** |
| **Refining arguments** | **Compares and refines arguments based on an evaluation of the evidence presented by multiple peers.** | **Compares and refines arguments based on an evaluation of the evidence presented by a peer.** | **Compares various arguments, but does not refine his/her own arguments.** | **When presented with evidence, does not refine argument.** |

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**Additional Information**

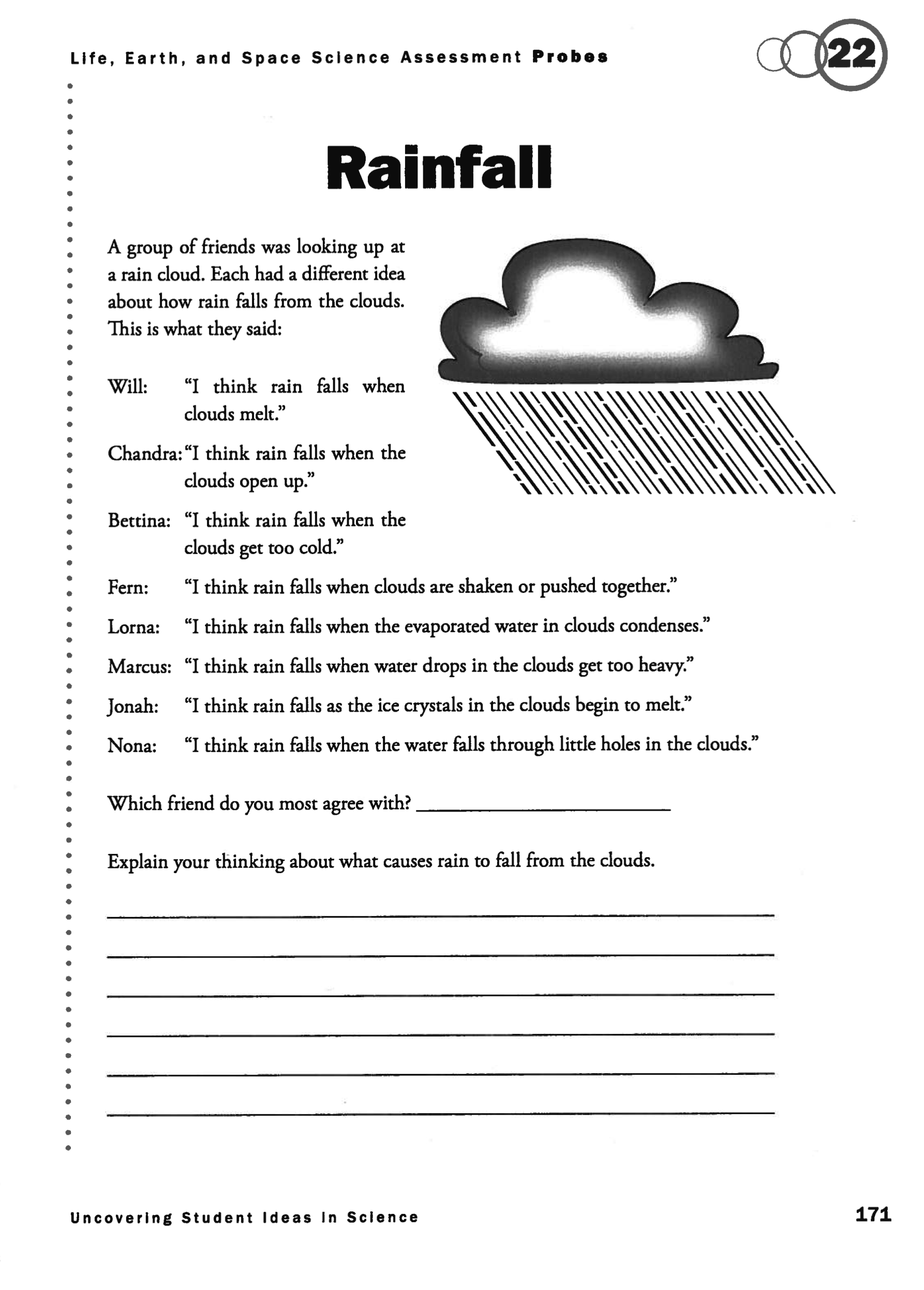
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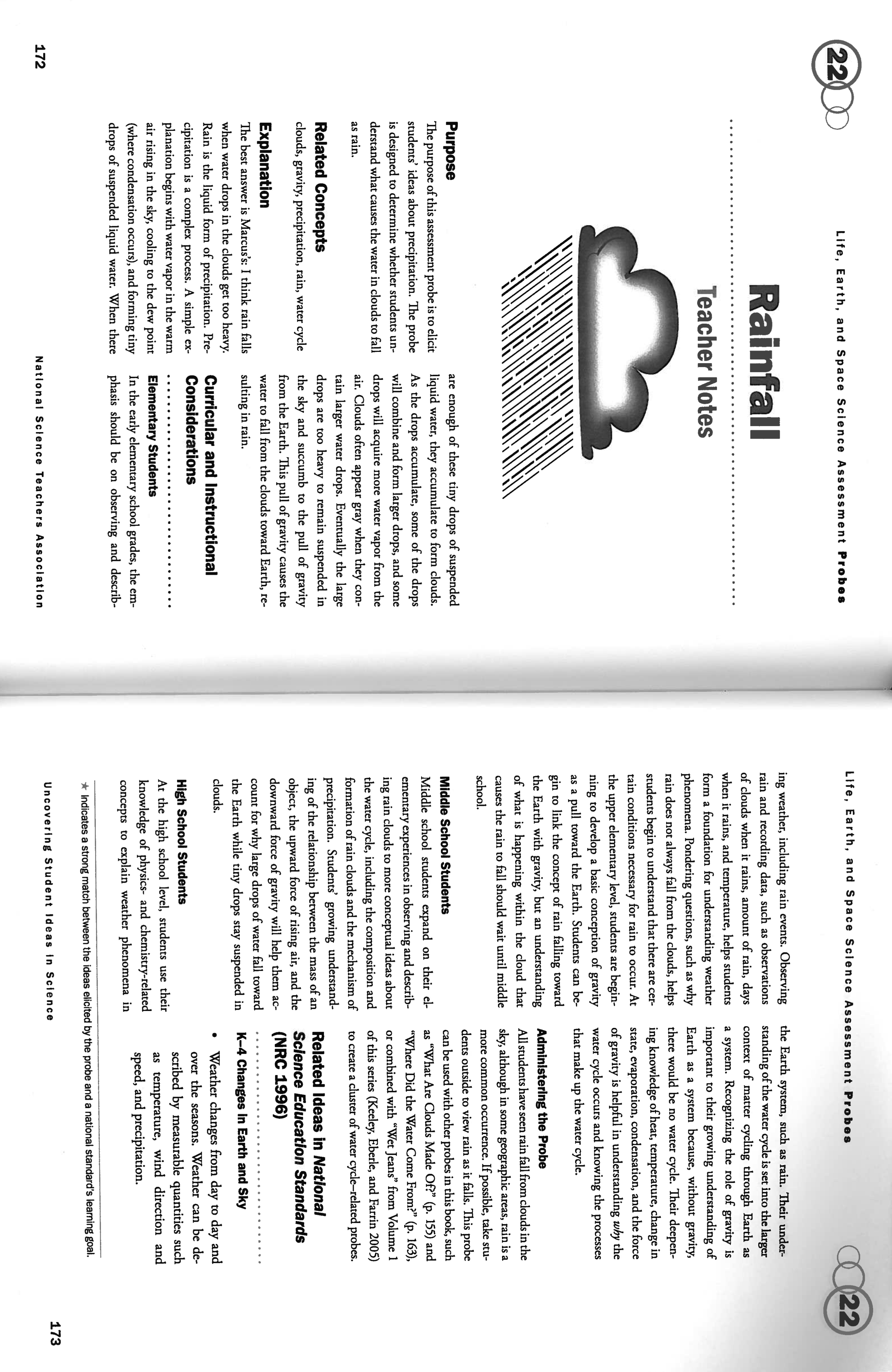
· Information that will be useful when teaching this lesson

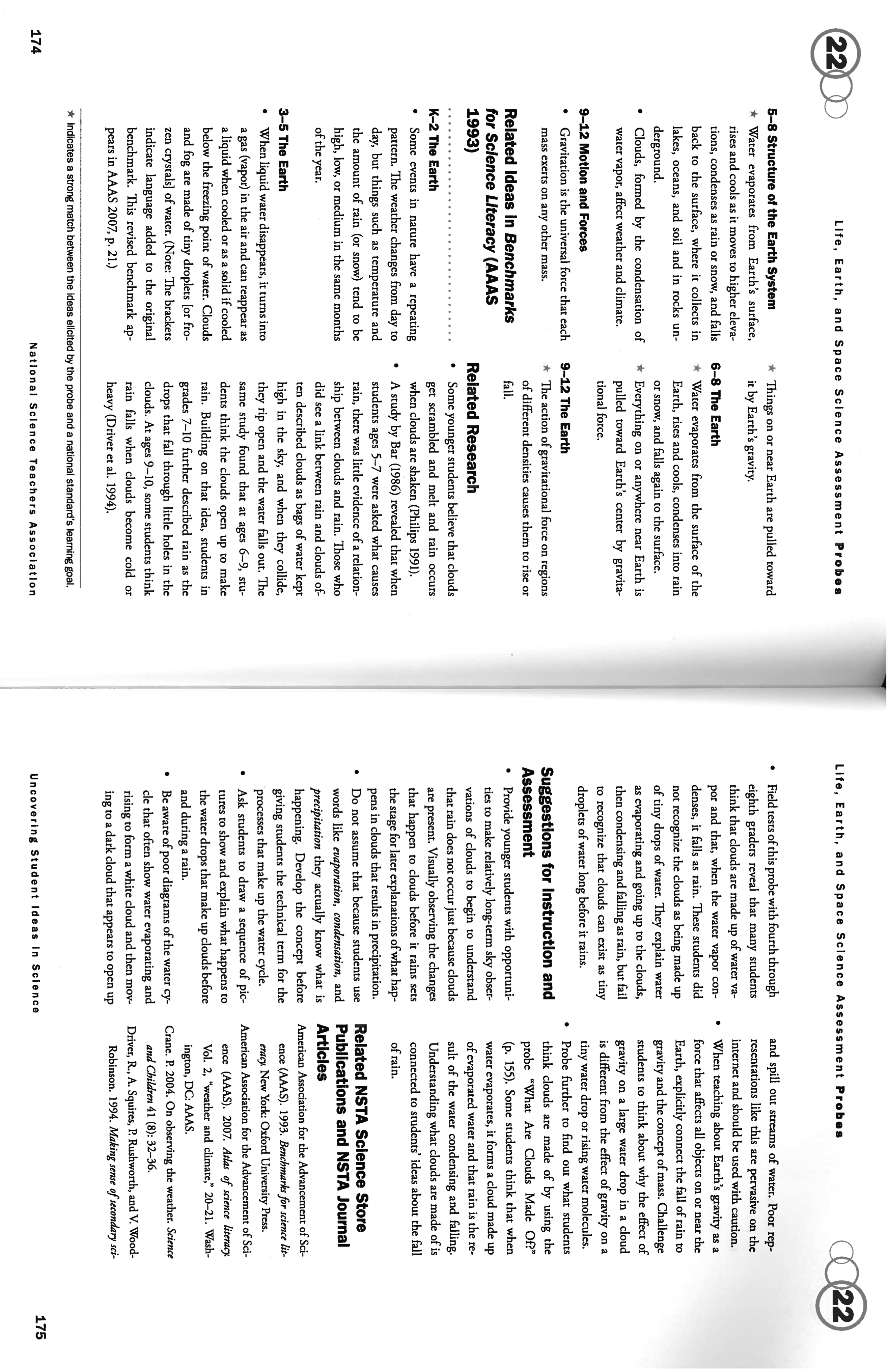
Chapter 5 in ***Ready, Set, Science***

* Resources that will be useful

Probes (Page Keeley)







Discussion Norms

1. We don’t judge people. We examine the validity of their evidence.
2. We are going to disagree. That’s not just okay, it’s healthy. Just do so respectfully.
3. If you do disagree with someone, instead of getting angry, listen closely to his/her evidence to see if you can grow your own understanding of the topic.
4. You can’t just say whatever you want. You need evidence to back up your thoughts.
5. Encourage others to share their thoughts by being attentive and responsive.
6. Ask lots of questions.